



BUILDING NOTE

HIGH WINDS AND LOW TEMPERATURES ASSOCIATED WITH FREEZING PRECIPITATION

by Donald W. Boyd
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Freezing precipitation consists of drops of super-cooled water. A part of each drop freezes as soon as it strikes any object and, if the air temperature is below freezing, a considerable portion of each drop may freeze before it can run off. Such precipitation may result in dangerously heavy accumulation of ice on wires, such as those used for electric power and for communications. Continuing low temperatures and high winds add to the danger of breakage of the wires.

A careful study of the hourly weather reports from many stations for several years would be necessary before we could form a reliable picture of the severity of these phenomena in various parts of Canada. The present tables are based on daily totals or extremes, rather than the original hourly reports, and only two years' data have been used. Hence, the figures mean little from a quantitative point of view, but they may be of some value as a rough indication of the relative importance of freezing precipitation at a number of weather stations in Canada.

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The tables show opposite Hours the average number of hours when freezing rain or drizzle was reported in each month, and opposite Days the average number of days with at least one report of freezing rain or drizzle. These are based on the observations taken at forty-four stations in 1951 and 1952. One other station, Whitehorse, Yukon Territory, did not report any freezing precipitation in 1951 or 1952. When the average number of hours or days was greater than one and included one-half, then the half was dropped. The maximum number of miles of wind in one hour was found for each two-day period with freezing precipitation occurring on the first day. The highest of these two-day maximum hourly winds, in each month, is shown in the table opposite Wind, Highest, and the average opposite Wind, Av. Minimum temperatures occurring on the day of, or the day following freezing precipitation were also found. The lowest of these two-day minimum temperatures, in each month, is shown in the table opposite Temp. Lowest, and the average opposite Temp. Av.

These tables were prepared by the Meteorological Division of the Department of Transport and have been copied by the Division of Building Research of the National Research Council with the kind permission of the Controller of the Meteorological Division.

Prince George

Hours
Days
Wind, Highest
Wind, Av.
Temp. Lowest
Temp. Av.

Vancouver

Hours
Days
Wind, Highest
Wind, Av.
Temp. Lowest
Temp. Av.

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JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEP. OCT. NOV. DEC.

BRITISH COLUMBIA

Crescent Valley

Hours	2										$\frac{1}{2}$
Days	1										$\frac{1}{2}$
Wind, Highest	-										-
Wind, Av.	-										-
Temp. Lowest	19										16
Temp. Av.	22										16

Fort Nelson

Hours	$\frac{1}{2}$	$\frac{1}{2}$				1	$\frac{1}{2}$	6	5
Days	$\frac{1}{2}$	$\frac{1}{2}$				$\frac{1}{2}$	$\frac{1}{2}$	2	2
Wind, Highest	17	7				14	22	22	21
Wind, Av.	17	7				14	22	14	12
Temp. Lowest	-28	-1				29	23	-11	-21
Temp. Av.	-28	-1				29	23	7	-8

Prince George

Hours		$\frac{1}{2}$				$\frac{1}{2}$		6
Days		$\frac{1}{2}$				$\frac{1}{2}$		2
Wind, Highest		14				15		25
Wind, Av.		14				15		16
Temp. Lowest		31				30		19
Temp. Av.		31				30		24

Vancouver

Hours	8
Days	2
Wind, Highest	19
Wind, Av.	13
Temp. Lowest	19
Temp. Av.	22

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BRITISH COLUMBIA (Cont'd)

Victoria

Hours	2
Days	1
Wind, Highest	20
Wind, Av.	18
Temp. Lowest	26
Temp. Av.	28

YUKON TERRITORY

Snag

Hours		4	1
Days		1	$\frac{1}{2}$
Wind, Highest		6	11
Wind, Av.		5	11
Temp. Lowest		11	17
Temp. Av.		15	17

Watson Lake

Hours	2	3	1
Days	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Wind, Highest	12	7	5
Wind, Av.	12	7	5
Temp. Lowest	0	20	4
Temp. Av.	0	20	4

NORTHWEST TERRITORIES

Fort Smith

Hours	1	21	5
Days	$\frac{1}{2}$	5	2
Wind, Highest	10	18	26
Wind, Av.	10	13	13
Temp. Lowest	2	-8	-17
Temp. Av.	2	8	-8

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NORTHWEST TERRITORIES (Cont'd)

Frobisher

Hours	2	$\frac{1}{2}$	$\frac{1}{2}$
Days	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$
Wind, Highest	-	-	-
Wind, Av.	-	-	-
Temp. Lowest	-14	24	32
Temp. Av.	-14	24	32

Yellowknife

Hours	$\frac{1}{2}$	$\frac{1}{2}$	5	18	6
Days	$\frac{1}{2}$	$\frac{1}{2}$	2	5	2
Wind, Highest	-	-	-	20	24
Wind, Av.	-	-	-	13	14
Temp. Lowest	-2	29	4	-16	-2
Temp. Av.	-2	29	14	3	5

ALBERTA

Calgary

Hours	$\frac{1}{2}$	6	8
Days	$\frac{1}{2}$	1	1
Wind, Highest	-	-	-
Wind, Av.	-	-	-
Temp. Lowest	3	20	19
Temp. Av.	3	22	22

Edmonton

Hours	1	$\frac{1}{2}$	1	2
Days	1	$\frac{1}{2}$	$\frac{1}{2}$	1
Wind, Highest	17	19	12	19
Wind, Av.	16	19	12	14
Temp. Lowest	2	26	22	-19
Temp. Av.	16	26	22	1

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ALBERTA (Cont'd)

Grande Prairie

Hours	1	1							1	6
Days	$\frac{1}{2}$	$\frac{1}{2}$							1	$\frac{1}{2}$
Wind, Highest	15	7							22	9
Wind, Av.	15	7							21	9
Temp. Lowest	-7	20							-2	11
Temp. Av.	-7	20							12	11

Medicine Hat

Hours								1	3	$\frac{1}{2}$
Days								$\frac{1}{2}$	1	$\frac{1}{2}$
Wind, Highest								17	21	20
Wind, Av.								17	16	20
Temp. Lowest								9	11	-14
Temp. Av.								9	20	-14

SASKATCHEWAN

North Battleford

Hours	1	4				2	-	4	4
Days	$\frac{1}{2}$	1				$\frac{1}{2}$	-	1	1
Wind, Highest	9	22				25	-	24	23
Wind, Av.	9	20				25	-	20	15
Temp. Lowest	4	5				25	-	13	-6
Temp. Av.	4	12				25	-	17	4

Regina

Hours	$\frac{1}{2}$	$\frac{1}{2}$				1	$\frac{1}{2}$	6	10
Days	$\frac{1}{2}$	$\frac{1}{2}$				1	$\frac{1}{2}$	2	2
Wind, Highest	-	-				-	-	-	-
Wind, Av.	-	-				-	-	-	-
Temp. Lowest	-4	10				24	22	12	-2
Temp. Av.	-4	10				25	22	18	3

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SASKATCHEWAN (Cont'd)

Saskatoon

Hours	3	1					6	2	6	3
Days	1	$\frac{1}{2}$					1	1	1	1
Wind, Highest	25	18					28	39	20	16
Wind, Av.	17	18					28	28	17	15
Temp. Lowest	-7	-4					25	17	18	-5
Temp. Av.	1	-4					26	20	21	-3

MANITOBA

Churchill

Hours		8	48	3		$\frac{1}{2}$	5	9	4
Days		2	8	1		$\frac{1}{2}$	2	4	2
Wind, Highest		32	39	20		23	41	29	24
Wind, Av.		29	25	19		23	26	23	20
Temp. Lowest		0	18	19		28	20	0	-4
Temp. Av.		19	26	24		28	25	11	13

Gimli

Hours	13	2					1	4
Days	3	$\frac{1}{2}$					$\frac{1}{2}$	2
Wind, Highest	19	13					17	27
Wind, Av.	16	13					17	20
Temp. Lowest	-2	22					16	12
Temp. Av.	10	22					16	16

The Pas

Hours	1	2					$\frac{1}{2}$	18	5
Days	1	$\frac{1}{2}$					$\frac{1}{2}$	4	2
Wind, Highest	20	16					23	25	18
Wind, Av.	16	16					23	19	17
Temp. Lowest	4	9					18	13	-13
Temp. Av.	6	9					18	22	4

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MANITOBA (Cont'd)

Winnipeg

Hours	$\frac{1}{2}$	4	$\frac{1}{2}$					$\frac{1}{2}$	4	4
Days	$\frac{1}{2}$	1	$\frac{1}{2}$					$\frac{1}{2}$	1	1
Wind, Highest	32	24	29					24	25	26
Wind, Av.	32	20	29					24	23	23
Temp. Lowest	13	15	17					18	8	-5
Temp. Av.	13	20	17					18	17	11

ONTARIO

Fort William

Hours	9	4	2	1						$\frac{1}{2}$
Days	1	1	1	$\frac{1}{2}$						$\frac{1}{2}$
Wind, Highest	29	15	20	25						18
Wind, Av.	28	11	19	25						18
Temp. Lowest	-8	-15	25	31						22
Temp. Av.	-1	10	27	31						22

Kapuskasing

Hours	5	3	1	3					21	16
Days	1	1	1	$\frac{1}{2}$					3	4
Wind, Highest	27	13	26	24					22	22
Wind, Av.	20	12	23	24					19	21
Temp. Lowest	-25	1	6	15					8	-11
Temp. Av.	-12	12	12	15					16	18

London

Hours	10	4	12						5	3
Days	4	2	3						1	2
Wind, Highest	35	38	46						23	23
Wind, Av.	25	25	32						22	21
Temp. Lowest	6	14	15						6	12
Temp. Av.	18	20	25						18	20

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ONTARIO (Cont'd)

Malton

Hours	6	6	8							1	3
Days	2	1	3							$\frac{1}{2}$	2
Wind, Highest	-	-	-							-	-
Wind, Av.	-	-	-							-	-
Temp. Lowest	-6	12	22							9	9
Temp. Av.	9	16	26							9	23

North Bay

Hours	14	15	8	1						8	11
Days	4	3	2	1						3	3
Wind, Highest	33	29	30	24						25	25
Wind, Av.	21	20	25	23						21	20
Temp. Lowest	-13	-13	10	10						4	-8
Temp. Av.	6	12	15	19						16	10

Ottawa

Hours	20	10	13							2	5
Days	4	4	3							$\frac{1}{2}$	2
Wind, Highest	-	-	-							-	-
Wind, Av.	-	-	-							-	-
Temp. Lowest	-13	-10	10							20	-6
Temp. Av.	5	14	16							20	15

Sioux Lookout

Hours	2	17	3							4	7
Days	1	4	1							2	2
Wind, Highest	-	-	-							-	-
Wind, Av.	-	-	-							-	-
Temp. Lowest	-16	-13	-9							13	-27
Temp. Av.	-6	12	6							19	11

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ONTARIO (Cont'd)

Sudbury

Hours	8	6	3	$\frac{1}{2}$				$\frac{1}{2}$		10
Days	3	1	$\frac{1}{2}$	$\frac{1}{2}$				$\frac{1}{2}$		1
Wind, Highest	19	14	23	14				16		20
Wind, Av.	16	11	23	14				16		14
Temp. Lowest	-12	-16	12	15				24		-3
Temp. Av.	4	-1	12	15				24		17

Trenton

Hours	11	2	11					4		6
Days	3	1	2					$\frac{1}{2}$		2
Wind, Highest	29	20	42					20		43
Wind, Av.	25	17	30					20		25
Temp. Lowest	3	11	21					24		4
Temp. Av.	15	12	25					24		19

Windsor

Hours	6	6	2					1		1
Days	3	1	2					$\frac{1}{2}$		1
Wind, Highest	-	-	-					-		-
Wind, Av.	-	-	-					-		-
Temp. Lowest	11	17	22					24		11
Temp. Av.	22	22	26					24		19

QUEBEC

Dorval

Hours	18	18	16					3		16
Days	7	4	4					1		2
Wind, Highest	33	27	31					23		29
Wind, Av.	25	20	20					22		25
Temp. Lowest	-12	-11	10					22		7
Temp. Av.	6	11	20					23		15

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QUEBEC (Cont'd)Megantic

Hours	3	9	8	1
Days	1	2	4	1
Wind, Highest	39	23	46	22
Wind, Av.	30	17	25	19
Temp. Lowest	5	-14	13	30
Temp. Av.	8	1	21	16

Mont Joli

Hours	10	7	4	1		6	2
Days	3	2	2	1		3	$\frac{1}{2}$
Wind, Highest	41	41	29	20		27	34
Wind, Av.	34	28	23	20		22	34
Temp. Lowest	-7	-11	11	25		14	20
Temp. Av.	6	9	21	27		20	20

Seven Islands

Hours	2	4	2	4		$4\frac{1}{2}$	3	8
Days	1	1	1	1		$\frac{1}{2}$	1	1
Wind, Highest	-	-	-	-		-	-	-
Wind, Av.	-	-	-	-		-	-	-
Temp. Lowest	-10	-15	4	27		31	17	13
Temp. Av.	-2	9	15	28		31	20	21

NEW BRUNSWICKChatham

Hours	15	23	20	$\frac{1}{2}$		1	14
Days	5	5	4	$\frac{1}{2}$		$\frac{1}{2}$	4
Wind, Highest	27	28	26	20		20	28
Wind, Av.	21	20	19	20		20	20
Temp. Lowest	-2	-3	12	28		19	6
Temp. Av.	11	16	20	28		19	21

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BOYD

BOYD, Donald W.
AUTHOR High winds and low tem-
peratures associated with
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NEW BRUNSWICK (Cont'd)

Moncton

Hours	3	34	18	9						1	8
Days	2	8	5	2						$\frac{1}{2}$	3
Wind, Highest	35	41	35	24						29	48
Wind, Av.	31	29	24	20						29	25
Temp. Lowest	3	-5	3	27						28	-10
Temp. Av.	10	16	22	30						28	20

Saint John

Hours	1	11	8								3
Days	$\frac{1}{2}$	3	1								1
Wind, Highest	22	33	-								38
Wind, Av.	22	25	-								30
Temp. Lowest	10	-3	23								26
Temp. Av.	10	20	25								27

NOVA SCOTIA

Dartmouth

Hours	10	18	8								3
Days	3	4	2								1
Wind, Highest	26	45	29								27
Wind, Av.	23	27	24								26
Temp. Lowest	6	0	17								8
Temp. Av.	16	19	24								12

Sydney

Hours	10	23	21	2
Days	4	5	6	1
Wind, Highest	45	50	50	25
Wind, Av.	33	28	25	23
Temp. Lowest	9	3	19	29
Temp. Av.	18	19	26	29

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NOVA SCOTIA (Cont'd)

Yarmouth

Hours	6	3	2								5
Days	2	2	1								1
Wind, Highest	29	35	37								31
Wind, Av.	26	25	33								29
Temp. Lowest	12	9	23								11
Temp. Av.	21	15	28								15

PRINCE EDWARD ISLAND

Charlottetown

Hours	24	21	23	3		$\frac{1}{2}$	3
Days	5	5	7	1		$\frac{1}{2}$	$\frac{1}{2}$
Wind, Highest	64	58	34	28		30	39
Wind, Av.	31	35	22	21		30	31
Temp. Lowest	4	-6	12	30		29	24
Temp. Av.	12	20	22	30		29	25

NEWFOUNDLAND

Gander

Hours	27	61	54	23	$\frac{1}{2}$		17	22
Days	8	11	9	5	$\frac{1}{2}$		3	6
Wind, Highest	45	38	34	38	30		32	45
Wind, Av.	30	27	21	19	30		19	21
Temp. Lowest	1	-1	15	19	31		17	7
Temp. Av.	15	15	25	27	31		25	18

Torbay

Hours	26	35	41	22			3	35
Days	7	9	9	5			1	8
Wind, Highest	35	50	41	34			-	-
Wind, Av.	29	29	28	22			-	-
Temp. Lowest	12	5	18	26			23	12
Temp. Av.	21	19	26	29			25	24

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